



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,805	01/25/2006	Michael Stelter	002664-28	9700

25570 7590 04/15/2008
ROBERTS, MLOTKOWSKI & HOBBS
P. O. BOX 10064
MCLEAN, VA 22102-8064

EXAMINER

SIDDIQUEE, MUHAMMAD S

ART UNIT	PAPER NUMBER
----------	--------------

1795

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

04/15/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Dbeltran@rmhlaw.com
LGaughan@rmhlaw.com

Office Action Summary	Application No. 10/565,805	Applicant(s) STELTER, MICHAEL	
	Examiner MUHAMMAD SIDDIQUEE	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) 1-22 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/14/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-14, drawn to Process for producing a fuel cell.

Group II, claim(s) 15-22, drawn to Device for producing a fuel cell.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the device in Group II is required to use in the Group I for the process of producing a fuel cell, however, the device is known in the prior art, so it does not make any contribution over the prior art (JP 11007975 A).

3. During a telephone conversation with Mr. D. Safron, Esq. on 3/3/08 a provisional election was made without traverse to prosecute the invention of Process for producing a fuel cell, claims 1-14. Affirmation of this election must be made by applicant in replying to this Office action. Claims 15-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are

subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1795

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rock (US 2003/0203269 A1) in view of Cisar et al (US 6,533,827 B1).

Regarding claim 1, Rock discloses a method for producing a fuel cell stack by stacking a plurality of fuel cells arranged in a stacked configuration to form a fuel cell assembly and then compressing the fuel cell stack with a predetermined compressive load (controlled force) [Abstract; paragraph 0010-0011]. Rock fails to teach joining and applying heat to the fuel cell. However, Cisar teaches a method for preparing a subassembly for an electrochemical cell comprising aligning a subassembly having two or more electrochemical cell components with one or more bonding elements disposed between the two or more electrochemical cell components (joining the cell stack) and then heating and compressing the cells to form the fuel cell stack [Abstract; column 2, lines 39-47]. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the steps of joining and sealing the cell

Art Unit: 1795

stack with heat as taught by Cisar in the fuel cell stacking method of Rock in order to have gas tight sealing of the fuel cell and have less scraping during production.

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rock (US 2003/0203269 A1) in view of Cisar et al (US 6,533,827 B1) as applied in claim 1 and further in view of Bisaka et al (US 2002/0034673 A1).

Regarding claim 2, Rock discloses that stacking is performed by an external compressive load which generates an internal compressive load of a predetermined magnitude F (controlled force) on the fuel cell assembly [paragraph 0050]. Rock/Cisar fail to disclose using a force sensor to detect force while assembling the stack.

However, Bisaka teaches a fuel cell apparatus for tightening stack of fuel cells where a load sensor (34) (force sensor) is used to measure the force acting perpendicular to the fuel cell plane [paragraph 0095, 0096, 0123]. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize a force sensor as taught by Bisaka in the fuel cell stacking method of Rock/Cisar in order to detect load on the fuel cell and evenly distribute pressure on the cells to have gas tight sealing of the fuel cell assembly.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rock (US 2003/0203269 A1) in view of Cisar et al (US 6,533,827 B1) and Bisaka et al (US 2002/0034673 A1) as applied in claim 2 and further in view of Eaton et al (US 2003/0190226 A1).

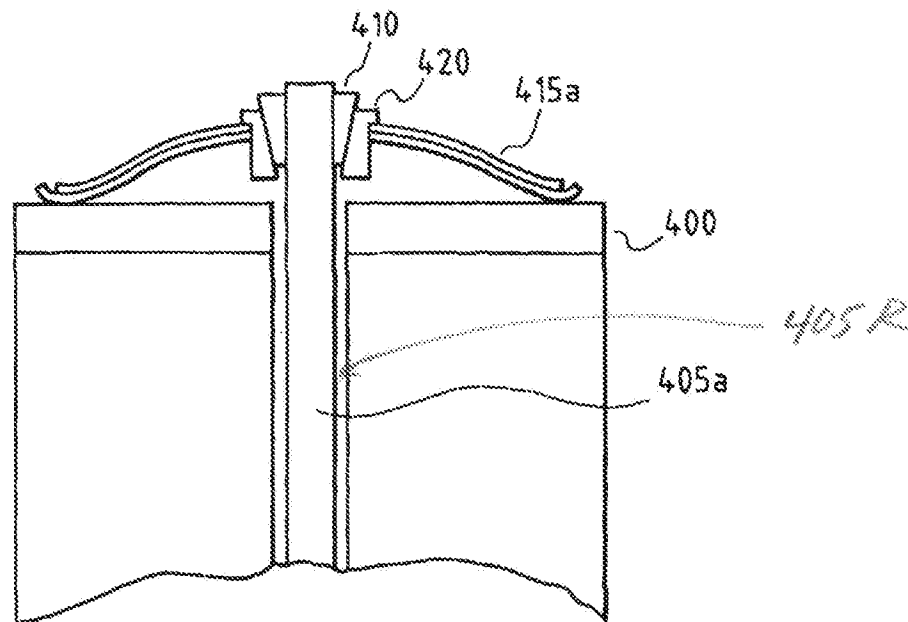
Regarding claim 3, Rock also discloses that stacking can be performed by a predetermined distance method where the fuel cell stack is compressed to a

predetermined distance D by an external load [paragraph 0051]. Rock/Cisar remain silent about using a distance sensor. However, Eaton teaches using a distance sensor (60) to determine fuel cell stack height and the vertical travel needed to seal fuel cells [paragraph 0041 and 0050]. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize a distance sensor as taught by Eaton in the fuel cell stacking method of Rock/Cisar/Bisaka in order to detect a change of the dimensions of the assembled fuel cell stacks and effectively seal the fuel cell assembly.

10. Claims 4-5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rock (US 2003/0203269 A1) in view of Cisar et al (US 6,533,827 B1) as applied in claim 1 and further in view of Barton et al (US 6,190,793 B1).

Regarding claims 4-5 and 13, Rock/Cisar remain silent about using a tension means with the compressive load. However, Barton teaches a method of stacking a fuel cell stack using combination of compressive force and tension means with a tension member (405a) (tie rod) which extends through a recess (405R) provided in the assembled fuel cell stack and which transmits the at least one controlled force component to the assembled fuel cell stack [Abstract; Fig. 3A]. Barton also teaches using wedges and collect (360, 350) (locking element) to secure the tension member (tie rod). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize a tension member and wedges and collect as taught by Barton in the fuel cell stacking method of Rock/Cisar in order to compress and hold tight the assembled fuel cell stacks for effective sealing of the fuel cell assembly.

FIG. 3A



11. Claims 6-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rock (US 2003/0203269 A1) in view of Cisar et al (US 6,533,827 B1) as applied in claim 1 and further in view of Herrmann (US 2004/0081864 A1).

Regarding claims 6-10, Rock/Cisar remains silent about checking the fuel cell assembly for gas tightness. Herrmann teaches a method of testing leakage of fuel cell for gas tightness for a single fuel cell or a stack of fuel cell assembly [paragraph 0015]. Herrmann also teaches performing leak test by introducing hydrogen (reducing gas) and nitrogen gas mixture to the fuel cell and measuring the pressure drop to detect possible leaks [paragraph 0013, 0016 and 0017]. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the leak testing method as taught by Herrmann in the fuel cell stacking method of Rock/Cisar,

during and after joining steps, and repeat applying compressive force if necessary in order to ensure leak-free and gastight assembly of fuel cell stacks.

Regarding claim 14, Herrmann teaches that it is known in the art that testing of the fuel cell with fuel gas like hydrogen is performed in the testing chamber (gastight chamber) to avoid explosion [paragraph 0006]. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to perform joining and chemical forming steps in a gas tight testing chamber as taught by Herrmann in the fuel cell stacking method of Rock/Cisar/Herrmann in order to ensure safe operation of stacking of fuel cell stacks.

12. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rock (US 2003/0203269 A1) in view of Cisar et al (US 6,533,827 B1) and Herrmann (US 2004/0081864 A1) as applied in claim 9 and further in view of Debe et al (US 2003/0041444 A1).

Regarding claims 11-12, Rock/Cisar/Herrmann remain silent about testing electrical serviceability of the fuel cell. However, testing of voltage and current of the fuel cell is a routine practice in the art. Debe teaches that membrane assembly of fuel cell is tested using hydrogen/oxygen gas flows applied to respective sides of the assembly and then voltage and current is measured and checked for electrical serviceability. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the voltage/current testing method as taught by Debe in the fuel cell stacking method of Rock/Cisar/Herrmann in order to ensure electrical serviceability of the fuel cell stacks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MUHAMMAD SIDDIQUEE whose telephone number is (571)270-3719. The examiner can normally be reached on Monday-Thursday, 7:30 am to 4:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)? If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MSS

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795